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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,043	09/28/2001	Scott R. Grodevant	ML-0518CV	4278

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EXAMINER

HENN, TIMOTHY J

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,043

Applicant(s)

GRODEVANT, SCOTT R.

Examiner

Timothy J. Henn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 19,20,23,24,29 and 30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7,25 and 26 is/are allowed.
- 6) ☒ Claim(s) 8-18,21,22,27 and 28 is/are rejected.
- 7) ☒ Claim(s) 8 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/18/02
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Figure 3 in the reply filed on 23 November 2004 is acknowledged.
2. Claims 19, 20, 23, 24, 29 and 30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 23 November 2004.

Drawings

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because hand written labels can be difficult to read. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

4. Claims 8 and 17 are objected to because of the following informalities: In the second to last line of claims 8 and 17, replace each occurrence of "valve" with "value". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 10-14, 21, 27 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Cline et al. (US 6,462,770).

[claim 10]

Regarding claim 10, Cline discloses a system for imaging an object comprising: a source for illumination (Figure 1, Item 36); optics for scanning the illumination to the object (Figure 2, ENDOSCOPE ILLUMINATION GUIDE) and receiving returned illumination representing at least one section of the object (Figure 6, MIRROR 186 and various LENS); means for detecting the returned illumination and forming a signal representative of an image of the section of the object (Figure 6); means for displaying the image of the second of the object in accordance with said signal (Figure 1, Item 54; c. 5, l. 66 - c. 6, l. 1); and means for automatically controlling the intensity of the illumination source in accordance with a characteristic of the displayed image (c. 5, ll. 18-22; c. 7, ll. 11-15).

[claim 11]

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Regarding claim 11, Cline discloses adjusting the illumination source based on the intensity (i.e. brightness) of the image (e.g. c. 7, l. 11 - c. 10, l. 35).

[claims 12-14]

Regarding claims 12-14, these claims are written as intended use and the applicant is reminded that apparatus claims must differentiate from the prior art in terms of structure rather than function (see MPEP §2114).

[claim 21]

Regarding claim 21, Cline discloses displaying and recording video outputs from the imaging device and controlling the illumination source based on the output of image signals. Therefore, the illumination must be enabled for successive images, and the successive images would be affected by the changes in the illumination source by the AGC circuit.

[claims 27 and 28]

Claims 27 and 28 are method claims corresponding to apparatus claims 10 and 11. Therefore, claims 27 and 28 are analyzed and rejected as previously discussed with respect to claims 10 and 11.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8, 9, 15-18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cline et al. (US 6,642,770) in view of Stevenson et al. (US 6,782,063).

[claim 8]

Regarding claim 8, Cline discloses an imaging system capable of producing successive frames of images, wherein the imaging system has an illumination source (Figure 1) including an automatic gain controller for receiving frames of images and converting each of the frames into pixels in which each pixel has a brightness value (i.e. receiving incoming light and converting it into electrical signals through the use of an ICCD (c. 4, ll. 39-60) and a computer system (Figure 1, CONTROL CENTER) coupled to the illumination source for controlling the illumination source (e.g. c. 5, ll. 18-22). However, Cline does not disclose means for counting the number of pixels of the frame of the image which have a brightness value above an upper threshold to provide a first value, the number of pixels of each frame of the image which have a brightness value below a lower threshold to provide a second value and the total number of pixels of the frame and controlling the illumination source in accordance with the first and second values and the counted total number of pixels.

Stevenson discloses an automatic gain control system which counts samples (i.e. pixels) which fall above and below certain thresholds (Figure 2, Items 38 and 48) and the total number of samples (i.e. pixels; Figure 2, Item 44) in order to produce a gain control result (Figure 2, Items 54 and 68). Stevenson further discloses that an advantage of his invention is that it relatively stable and is simple enough to make

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hardware implementation feasible (c. 1, ll. 48-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the AGC system of Stevenson in place of the AGC system disclosed by Cline in order to have relatively stable and simple AGC control for the illumination source of Cline.

[claim 9]

Regarding claim 9, note that the AGC system of Stevenson is operable over a subset of samples (Figure 2; i.e. does not require all the samples to be processed prior to producing a gain control result).

[claim 15]

Regarding claim 15, Cline discloses providing pixels representing at least part of the image in accordance with said signal in which each signal has a value (i.e. outputting the electrical signals formed by the image pickup device to the AGC); and means for adjusting power to the illumination source (i.e. if the entire structure of Figure 2 is defined as the illumination source, the power supplied to it will inherently change when the intensity driver/motor is activated to change the intensity of the light source due to the increased current draw necessary to activate the intensity driver/motor). However, Cline does not disclose means for counting the number of pixels above and below thresholds to create a first value and a second value, and means for providing third and fourth values representing percentages of the total counted pixels.

Stevenson discloses an automatic gain control system which counts samples (i.e. pixels) which fall above and below certain thresholds (Figure 2, Items 38 and 48) in order to produce a gain control result based on the value of the counts and percentages

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of the total number of pixels counted (Figure 2, Items 54 and 68). Stevenson further discloses that an advantage of his invention is that it is relatively stable and is simple enough to make hardware implementation feasible (c. 1, ll. 48-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the AGC system of Stevenson in place of the AGC system disclosed by Cline in order to have relatively stable and simple AGC control for the illumination source of Cline.

[claim 16]

Regarding claim 16, Stevenson discloses means for limiting the pixels counted to ones of the pixels in a region of a frame (Figure 2, Item 42). The examiner notes that following the logic shown in Figure 2, when an interval timer reaches 90 seconds the high and low counters are reinitialized and counting begins from the start. This will inherently limit the number of samples or "pixels" which are counted to certain "ones" of the imaged region which have already been processed prior to the counters being reset.

[claims 17 and 18]

Regarding claims 17 and 18, see claims 8 and 16 respectively.

[claim 22]

Regarding claim 22, Cline discloses an automatic gain controller for an imaging system which has an illumination source, wherein the automatic gain controller controls the illumination source based on image data (e.g. Figure 2). However, Cline does not disclose counting the number of pixels which are bright and dim in order to control the illumination source based on the count.

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Stevenson discloses an automatic gain control system which counts samples (i.e. pixels) which fall above and below certain thresholds (Figure 2, Items 38 and 48) in order to produce a gain control result (Figure 2, Items 54 and 68). Stevenson further discloses that an advantage of his invention is that it is relatively stable and is simple enough to make hardware implementation feasible (c. 1, ll. 48-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the AGC system of Stevenson in place of the AGC system disclosed by Cline in order to have relatively stable and simple AGC control for the illumination source of Cline.

Allowable Subject Matter

9. Claims 1-7, 25 and 26 are allowed.

[claims 1-7, 25 and 26]

Regarding claims 1-7, 25 and 26 the prior art does not teach an automatic gain controller or method for automatic gain control wherein a frame of image data is received, counts of pixels which fall above or below thresholds are created and if the number of pixels above a first threshold is greater than a third value and the number of pixels below a second threshold is greater than a fourth value the power to a illumination source is reduced and if the number of pixels above a first threshold is less than a fourth value and the number of pixels below a second threshold is less than third value the power to a illumination source is increased as claimed.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following further shows the current state of the art in AGC systems using counts of pixels falling above and below thresholds:

- | | | |
|------|------------|--------------|
| i. | Luo et al. | US 6,859,230 |
| ii. | Dong | US 5,734,426 |
| iii. | Ikeda | JP 11-284904 |

The following further shows the current state of the art in imaging systems wherein the intensity of an illumination source is changed based on image signals:

- | | | |
|-----|------------------|--------------|
| iv. | Ishihara | US 6,399,942 |
| v. | Steinberg et al. | US 6,151,073 |
| vi. | Svetkoff et al. | US 5,546,189 |

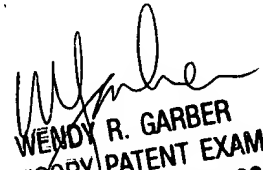
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
4/30/2005


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